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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/228,066	01/12/99	RUOSLAHTI E	P-LJ3430

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HM12/0723

EXAMINER	
TURNER, S	
ART UNIT	**PAPER NUMBER**
1645	6

DATE MAILED: 07/23/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.	Applicant(s)
09/228,566	Ruoslahti E
Examiner	**Group Art Unit**
Sharon L. Turner, Ph.D.	1645

☒ Responsive to communication(s) filed on *5-14-99* .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-12* is/are pending in the application.

Of the above, claim(s) *9-12* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-8* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *5*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Priority

1. The first line of the specification currently reads: This application is a X continuation of application U.S. Serial No. 08/526,708 filed September 11, 1995. The Examiner suggests amendment to delete the X before Continuation.

2. The priority date of instant claims is 9/11/95.

Election/Restriction

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-8, drawn to peptides that home to brain, classified in, class 530, subclass 331.

II. Claims 9-11, drawn to peptides that home to kidney, classified in, class 530, subclass 331.

III. Claim 12, drawn to a molecule that homes to a selected organ, classified in, class 530, subclass 200.

4. The inventions are distinct, each from the other because of the following reasons:

5. The inventions of Group I-III are related as products. The products are distinct each from the other because they are composed of unique structure and exhibit unique functional properties.

The products of Groups I and II differ in amino acid sequence and differ in homing properties, i.e., the products of Group I home selectively to brain whereas the products of Group II home selectively to kidney. The product of Group III is a composition comprising infinite numbers of molecules with infinite functional properties, including the ability to home to selected organs.

6. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

7. Because these inventions are distinct for the reasons given above and the search required for each of the groups is not required for any other group, restriction for examination purposes as indicated is proper.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

9. During a telephone conversation with Andrea Gashler on 5-27-99 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-12 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

10. Claims 2 and 5 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for SEQ ID NO:3 does not reasonably provide enablement for selective brain homing of any other peptide sequence. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The specification, page 15 lines 3-18, defines a selectively homing molecule as one that binds relatively specifically to a target molecule present in one or few selected organs following administration to a subject. In general it is characterized by detecting at least a 2-fold greater specific binding of the molecule to the selected organ as compared to a control organ. It is also stated that a molecule can localize non-specifically to an organ which can be distinguished from homing by performing competition experiments such as described in Example II.C. and II.D. which describe experiments that show competition of localization by excess administration of the homing peptide and direction of red blood cells to the target organ by conjugation with the homing peptide. Claim 2 recites the peptide of claim 1, said peptide having the amino acid sequence X_1 SRLX_2 (SEQ ID NO:45) wherein X_1 and X_2 each is about 1 to about 10 independently selected amino acids. Claim 5 recites the peptide of claim 1, said peptide having the amino acid sequence X_3 VLR_4 (SEQ ID NO:46) wherein X_3 is absent or is about 1 to 10 independently selected amino acids and X_4 is about 1 to about 20 independently selected amino acids. The specification does not state that

SEQ ID NO's:1, 3, 4, 5, 16, 45 or 46 are localized to brain in twice the amount of the kidney, simply it reports that phage displaying those same amino acid sequences were recovered from phage within brain. Only SEQ ID NO:3 showed competition properties in experiment II.C. and the ability to direct red blood cells to brain. The in vivo panning technique used in the instant method is unknown in the art and there is no further description available to determine peptides which would be capable of homing as described other than the demonstration of homing by the defined guidelines of the specification and in examples such as those provided for SEQ ID NO:3. One of skill in the art would be burdened to repeat the experimentation for each SEQ ID in order to be assured the ability of possessing a brain homing peptide absent no other assurance. This art is highly unpredictable as evidenced by the following example provided in the specification. SEQ ID NO:2 does not share the VLR or SRL motif but homes to brain as evidenced by the second highest recovery in phage from brain, thus presumably qualifying it as a brain homing peptide, however, it is unable to compete for binding and is therefore not a brain homing peptide. Thus SEQ ID NO:3 meets the definitions and qualifications of a brain homing peptide as defined in the specification, yet the breadth of instant claims do not.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards

as the invention. Claim 2 recites the peptide of claim 1, said peptide having the amino acid sequence X_1 SRLX_2 (SEQ ID NO:45) wherein X_1 and X_2 each is about 1 to about 10 independently selected amino acids. Claim 5 recites the peptide of claim 1, said peptide having the amino acid sequence X_3 VLR_4 (SEQ ID NO:46) wherein X_3 is absent or is about 1 to 10 independently selected amino acids and X_4 is about 1 to about 20 independently selected amino acids. The metes and bounds of the claims are unclear due to the wording about.

Claim Rejections - 35 USC § 102 or 103

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Tatemoto et al, FEBS Letters, 153(2), March 1983. Claim 1 recites a peptide that selectively homes to brain. Claim 2 recites the peptide of claim 1, said peptide having the amino acid sequence X_1 SRLX_2 (SEQ ID NO:45) wherein X_1 and X_2 each is about 1 to about 10 independently selected amino acids. Claims 3 and 4 are rejected for being dependent on rejected claim 2. Tatemoto et al teach the PHI brain peptide which possesses the S.L. motif and selectively homes to brain and intestine, which is consistent with the homing definition of homing to one or more organs. It is anticipated that the PHI peptide would also inherently compete and target brain due to the known presence of PHI receptors in brain and accessibility through the portal vasculature, for additional reference see, Ceccatelli et al, Neuroscience, 43(2-3):483-502. Thus Tatemoto et al anticipates claims 1-4.

16. Claims 1, and 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Beinfeld et al, Biochemical and Biophysical research communications, 127(3):720-725. Claim 1 is set forth

above. Claim 5 recites the peptide of claim 1, said peptide having the amino acid sequence X_3 VLR_4 (SEQ ID NO:46) wherein X_3 is absent or is about 1 to 10 independently selected amino acids and X_4 is about 1 to about 20 independently selected amino acids. Claim 6 is rejected as depending from claim 5. Claims 7-8 are rejected as depending from claim 1. Beinfeld et al teach CCK peptides with the sequence motif VLR that home to brain as evidenced by being more abundant in brain than in intestine, page 720, line 2. It is anticipated that the CCK peptide would also inherently compete and target brain due to the known presence of CCK receptors in brain, for additional reference see, Zarbin et al, J. Neuroscience, 3(4):877-906, 1983. Thus Beinfeld et al anticipates claims 5-8 of the instant application.

Status of Claims

17. No claims are allowed.

18. Any inquiry of a general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for Group 1600 is (703) 308-4242.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon L. Turner, Ph.D. whose telephone number is (703) 308-0056. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be reached at (703) 308-3995.

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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600